

FIG. 3

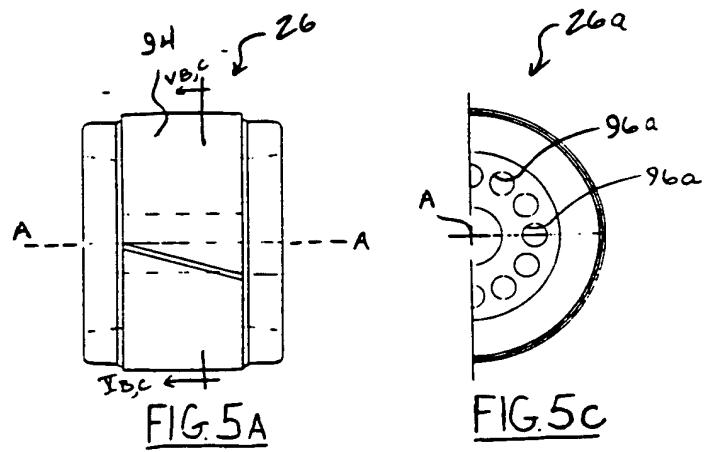


FIG. 5A

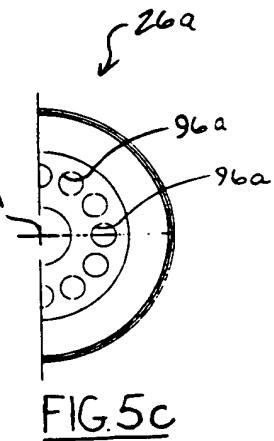


FIG. 5C

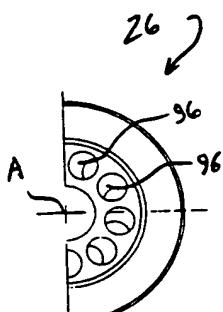


FIG. 5B

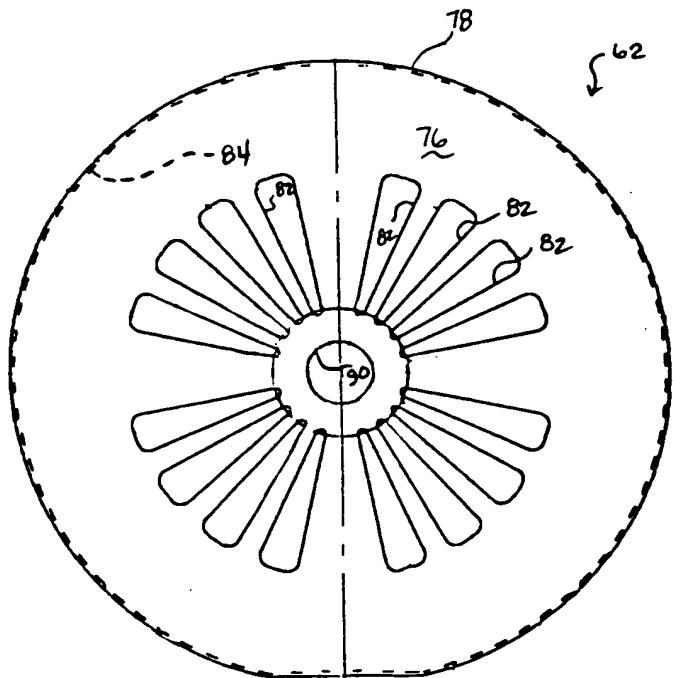


FIG. 4

19. A rotary machine according to claim 1, further comprising:
a baffle flange disposed around a circumference of an interior surface of the
working chamber near the first fan.

5 20. A rotary machine according to claim 1, wherein the first and second
fans are arranged to move air in the same direction through the case, and wherein
the cowl exhaust opening is closed off preventing air from being moved over the
case exterior surface.

10 21. A method of cooling a rotary machine having a case, a rotary shaft
supported within an interior working chamber of the case, and at least one machine
component supported for rotation on the rotary shaft within the working chamber,
the method comprising the steps of:

15 providing at least one air inlet and at least one air outlet in fluid
communication with the working chamber;

mounting a first fan for rotation on the rotary shaft within the working
chamber;

mounting a second fan for rotation on the rotary shaft within a plenum on
one end of the machine and exterior to the case;

20 arranging the first fan for moving air through the working chamber of the
case from the at least one air inlet and over the at least one machine component to
the at least one air outlet; and

25 arranging the second fan for moving at least a portion of air within the
plenum back over an exterior surface of the case and for assisting the first fan in
moving air through the working chamber.

ENHANCED COOLING APPARATUS AND METHOD FOR ROTATING
MACHINERY

Abstract

5 A rotating machine is disclosed that has a case with an exterior surface a pulley end, an opposite end, and an interior working chamber. A rotary shaft for rotation within the interior chamber between the pulley end and the opposite end. At least one machine component is supported for rotation on the rotary shaft. At
10 least one air inlet and at least one air outlet are formed through the case. A first fan is supported for rotation on the rotary shaft within the interior of the case and is arranged for pulling air through the air inlet into the interior of the case and for pushing air out the air outlet from the interior of the case. A cowl is received over the opposite end of the case. The cowl defines a plenum between an interior surface of the cowl and the case and also defines an annular air opening around a perimeter of the cowl and the case. A second fan is positioned within the plenum wherein the plenum and second fan are arranged for assisting in moving air through the interior working chamber of the case opposite end and also for pushing air toward the case and exiting the plenum through the annular opening to pass back over the exterior
15 surface of the case.
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